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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,847	05/14/2001	Brian Mathur	LEX-0173-USA	8347

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EXAMINER
SMITH, CAROLYN L

ART UNIT	PAPER NUMBER
1631	

DATE MAILED: 10/30/2002

b

Please find below and/or attached an Office communication concerning this application or proceeding.

Offic Action Summary	Application N .	Applicant(s)	
	09/854,847	MATHUR ET AL.	
	Examiner	Art Unit	
	Carolyn L Smith	1631	

-- The MAILING DATE of this communication appears on the cover she t with the corresp ndence address --

Peri d f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disp sition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) *4* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-4* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *7* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Pat nt Application (PTO-152)
6) ☒ Oth r: *See Continuation Sheet* .

Continuation of Attachment(s) 6). Other: sequence match data from Patent No. 6,284,241.

DETAILED ACTION

Applicants' sequence election of the SEQ ID NO: 1 (a polynucleotide encoding SEQ ID NO:2) in Paper No. 9, filed 9/10/02, is acknowledged. This sequence election includes an "understanding" that the applicants are making a specie election of polynucleotide. This is not agreed with. The sequence election requirement was a restriction requirement and not a specie election as noted in the office action, mailed 8/7/02.

Claim 1 is objected to because of the following informality: there is an "at" in the claim sentence which does not make grammatical sense. Appropriate correction is required.

The information disclosure statement (IDS) submitted on 3/07/02, is in compliance with the provisions of 37 CFR 1.97, except for the International Search Report for International Application No. PCT/US01/15499. This type of report is never published, therefore the date thereon is not a date of publication. Accordingly, the information disclosure statement, excluding the above-mentioned PCT/US01/15499, has been considered by the examiner.

Claims 1-4 are currently pending, claims 1-3 are under examination, and claim 4 is withdrawn from further consideration as being drawn to non-elected inventions.

LACK OF UTILITY UNDER 35 U.S.C. § 101:

The pending claims have been reviewed in light of the Utility Examination Guidelines and Guidelines for Examination of Patent Applications under 35 U.S.C. 112, first paragraph, "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1092-1111, Friday, January 5, 2001.

The examiner is using the following definitions in evaluating the claims for utility.

"Specific" - A utility that is *specific* to the subject matter claimed. This contrasts with a *general* utility that would be applicable to the broad class of the invention.

"Substantial" - A utility that defines a "real world" use. Utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use are not substantial utilities.

"Credible" - Credibility is assessed from the perspective of one of ordinary skill in the art in view of the disclosure and any other evidence of record that is probative of the applicant's assertions. That is, the assertion is an inherently unbelievable undertaking or involves implausible scientific principles.

"Well-established" - a specific, substantial, and credible utility which is well known, immediately apparent, or implied by the specification's disclosure of the properties of a material, alone or taken with the knowledge of one skilled in the art.

35 U.S.C. § 101 reads as follows:

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title".

Claims 1-3 are rejected under 35 U.S.C. § 101 because the claimed invention lacks patentable utility due to its not being supported by a specific, substantial, and credible utility or, in the alternative, a well-established utility.

The claimed subject matter is not supported by a specific, substantial, and credible utility because the disclosed uses are generally applicable to broad classes of this subject matter. In addition, further characterization of the claimed subject matter would be required to identify or reasonably confirm a "real world" use. The examiner does not find an adequate nexus between the evidence of record and the asserted properties of the claimed subject matter.

The information disclosed in the specification about SEQ ID NO: 1, a nucleic acid that encodes SEQ ID NO: 2, is that it encodes a novel human protein (page 2, lines 9-12) which shares structural similarity with mammalian lipocalin and prostaglandin D synthase (page 2, lines 5-8). This broad nucleotide sequence encoding protein utility characterization also pertains to other sequences listed in the specification (page 2, lines 9-13). The specification states that the polynucleotides are useful in the gene discovery and as markers for gene expression analysis (page 2, lines 18-26 and page 5, lines 26-35), identifying and mapping the coding regions of a genome (page 2, lines 26-35 and page 3, line 1). All of these possible uses are generic to any expressed polynucleotide from humans. In fact, the specification summarizes much of modern biotechnology, but fails to connect the specifically elected sequence (SEQ ID NO:1, the polynucleotide that encodes SEQ ID NO: 2) to any particular or specific utility.

Regarding substantial utility, no mention is made to the actual function of SEQ ID NO:1, so that the examiner is unable to identify any "real world" use of this gene in claims 1-3. The lack of establishment of substantial utility for the claimed subject matter is also noted in the specification. For example, in the assays for identifying, selecting, and validating novel molecular targets for drug discovery, the specification states that "use of these unique sequences permits direct confirmation of drug targets and recognition of drug dependent changes in gene expression that are modulated through pathways distinct from the drugs intended target," so that they can both define and monitor drug action and toxicity (page 7, lines 18-26). To find out what stimulatory/inhibitory agents regulate what activity of the protein encoded by the nucleic acid sequence, more basic research is needed first to find out the actual function of the protein. This need for such research clearly indicates that the protein encoded by the SEQ ID NO:1 and/or its function is not disclosed as to any substantial utility. A starting

material that can be used to produce a final product does not have substantial asserted utility in those instances where the final product is not supported by a specific and substantial utility. No proteins that are produced as final products from the claimed nucleic acid have identified specific and substantial utilities. Merely identifying and studying the properties of proteins does not define a "real world" context for use. Also, other listed utilities as summarized above or in the specification are not substantial or specific due their generic nature which can be applied to a variety of such compounds.

Neither the specification nor prior art discloses any property or activity for the claimed nucleic acid such that it would be rendered as having a "well established" utility.

Applicant should explicitly identify a specific, substantial, and credible utility for the claimed invention and establish a probative relation between any evidence of record and the originally disclosed properties of the claimed invention.

It is noted that applicant has mentioned mammalian lipocalins and prostaglandin D synthases which are known in the prior art and which share structural similarity to SEQ ID NO: 2 which is encoded by the claimed sequence of SEQ ID NO: 1 (page 2, lines 5-13). Absent factual evidence, one skilled in the art would have reason to doubt that sequence/structural similarity alone would reasonably support the assertion that the biological activity of the claimed subject matter would be the same as that of the similar sequence/structure. Furthermore, it is unclear whether the proteins identified in the prior art have actually been tested for biological activities or whether these also are asserted biological activities based upon sequence/structural similarity to yet a different sequence. Note that it would have been well known in the art that sequence similarity does not reliably correlate to structural similarity and that structural similarity does not reliably result in similar or identical biological activities. For example, it would have been well known that even a single nucleotide or amino acid change or mutation can destroy the

function of the biomolecule in many instances, albeit not in all cases. In the absence of factual evidence characterizing the structural and functional components of the biomolecule, the effects of these changes are largely unpredictable as to which ones will have a significant effect and which ones will be silent mutations having no effect. Several publications document the unpredictability of the relationship between sequence, structure, and function, although it is acknowledged that certain specific sequences have been found to be conserved in biomolecules having related function following a significant amount of further research. See Lopez et al. (Molecular Biology, 32:881-891,1999); Attwood (Science, 290:471-473, 2000); Gerhold et al. (BioEssays, 18(12):973-981, 1996); Wells et al. (Journal of Leukocyte Biology, 61(5):545-550, 1997); and Russell et al. (Journal of Molecular Biology, 244:332-350, 1994). However, this level of factual evidence is absent here.

Claim Rejections - 35 USC § 112, 1st Paragraph

LACK OF ENABLEMENT

Claims 1-3 are also rejected under 35 U.S.C. § 112, first paragraph. Specifically, since the claimed invention lacks patentable utility due to its not being supported by a specific, substantial, and credible utility or a well-established utility for the reasons set forth above, one skilled in the art would not know how to use the claimed invention.

LACK OF WRITTEN DESCRIPTION

Claims 1-3 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification discloses SEQ ID NO: 1 which corresponds to the DNA encoding the protein with SEQ ID NO: 2. SEQ ID NO: 1 and its full complement of the same length meet the written description provisions of 35 USC 112, first paragraph. However, claims 1-3 are directed to encompass gene sequences and a sequence that hybridizes to SEQ ID NO: 1. None of these sequences meet the written description provision of 35 USC 112, first paragraph. The specification provides insufficient written description to support the genus encompassed by the claim.

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention.* The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116.)

With the exception of SEQ ID NO: XXX, the skilled artisan cannot envision the detailed chemical structure of the encompassed polynucleotides and/or proteins, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it. The nucleic acid itself is required. See Fiers v. Revel, 25 USPQ2d 1601, 1606 (CAFC 1993) and Amgen Inc. V. Chugai Pharmacentical Co. Ltd., 18 USPQ2d 1016. In Fiddes v. Baird, 30 USPQ2d 1481, 1483, claims directed to mammalian FGF's were found unpatentable due to lack of written description for the broad class. The specification provided only the bovine sequence.

Finally, University of California v. Eli Lilly and Co., 43 USPQ2d 1398, 1404, 1405 held that:

...To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." *Lockwood v. American Airlines, Inc.* , 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997); *In re Gosteli* , 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (" [T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." *Lockwood* , 107 F.3d at 1572, 41 USPQ2d at 1966.

Therefore, only SEQ ID NO:1 encompassed by the claim meets the written description provision of 35 USC 112, first paragraph. The species specifically disclosed are not representative of the genus because the genus is highly variant. Applicant is reminded that Vas-Cath makes clear that the written description provision of 35 USC 112 is severable from its enablement provision. (See page 1115.)

Claim Rejections - 35 USC § 112, 2nd Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the phrase "drawn to" which is confusing as it is unclear if the claim should be interpreted to include a fragment of the sequence or the entire amino acid sequence. This rejection would not be appropriate if applicants reworded this claim using standard Markush language. Appropriate correction is required.

Claims 1 is rejected as being vague and indefinite for containing embodiments which are not part of the elected invention. Appropriate clarification of the metes and bounds of the claim via clearer wording is required.

Claim 2 recites the phrase "under stringent conditions" which is vague and indefinite. It is unclear whether the stringency meant thereby is "low", "medium", or

"high" stringency as these are distinct stringencies in the art of hybridization methodology. Clarification of the metes and bounds of the instant claims is required.

Claim 2 recites the phrase "or the complement thereof" which is vague and indefinite, because the claim does not adequately define the phrase which could mean complements are 100% similar and of the same length of the claimed sequence, or 90% similar and only a fragment of the claimed sequence, or any other scenario. Appropriate definition to the degree of complementarity to the claimed sequence is required.

Claim 3 recites the phrase "encodes *the* amino acid sequence" which is vague and indefinite, because it is unclear if the nucleic acid encodes the entire amino acid sequence or just a fragment of the sequence. Appropriate clarification of the metes and bounds of the claim via clearer wording is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(e) the invention was described in-
(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-3 are rejected under 35 U.S.C. 102(e)(2) as being anticipated by Xu (P/N 6,284,241). P/N 6,284,241 disclosed a sequence, SEQ ID NO: 52 (col. 67-68, residues 1-145) containing a fragment of SEQ ID NO: 1 (residues 293-437). This

sequence similarity can be seen in the attachment sheets, titled "Sequence match data from Patent No. 6,284, 241," which are included with this office action. Since one interpretation of claims 1-3 is that the isolated nucleic acid molecule encoding SEQ ID NO: 2 could contain just a fragment of the polynucleotide sequence and there is no mention of the degree of complementarity in claim 3, Xu teaches all of the limitations of claims 1, 2, and 3.

Conclusion

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR §1.6(d)). The CM1 Fax Center number is either (703) 308-4242 or (703) 305-3014.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carolyn Smith, whose telephone number is (703) 308-6043. The examiner can normally be reached Monday through Friday from 9 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, can be reached on (703) 308-4028.

Any inquiry of a general nature or relating to the status of this application should be directed to Patent Analyst Tina Plunkett whose telephone number is (703) 305-3524 or to the Technical Center receptionist whose telephone number is (703) 308-0196.

October 24, 2002

ARDIN H. MARSCHEL
PRIMARY EXAMINER